

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A catheter system, comprising:

a catheter having a distal end, a proximal end, and a main vessel guidewire lumen that is adapted to receive a main vessel guidewire, at least ~~one~~ first and second catheter radiopaque ~~marker~~ markers positioned on the catheter;

a side member disposed adjacent and fixedly attached to at least one location on the catheter, the side member having a distal end, a proximal end, and a branch vessel guidewire lumen that is adapted to receive a branch vessel guidewire;

an indicator to indicate that the distal end of the side member is advancing into a branch vessel, the indicator comprising at least ~~one~~ first and second side member radiopaque ~~marker~~ markers positioned on the side member, wherein the ~~at least one~~ first and second catheter radiopaque ~~marker~~ markers positioned on the catheter and the ~~at least one~~ first and second side member radiopaque ~~marker~~ markers positioned on the side member are juxtaposed in a first configuration, and at least one of the first and second side member radiopaque markers is separated from the first and second catheter radiopaque markers in a second configuration to indicate that the distal end of the side member is advancing into the branch vessel; and

a stent having a side hole through a wall thereof, the stent being disposed over the catheter, wherein the stent hole is substantially alignable with the branch vessel, and when the stent hole is substantially alignable with the branch vessel the stent is disposed substantially in the main vessel prior to expansion;

wherein a distal portion of the side member is disposed within at least a portion of the stent while being adjacent to the catheter, and ~~the distal portion of the side member which is disposed within the at least a portion of the stent is capable of being moveable with respect to the catheter~~ and extends through the side hole of the stent prior to the side member advancing into the branch vessel.

2. (Canceled)

3. (Previously Presented) The catheter system of claim 1, wherein the radiopaque marker on the catheter and on the side member are positioned adjacent the side hole in the stent.
4. (Canceled)
5. (Previously Presented) The catheter system of claim 1, wherein the at least one radiopaque marker on the catheter comprises a radiopaque markers positioned at a proximal end and a distal end of the stent.
6. (Previously Presented) The catheter' system of claim 1, wherein the at least one marker on the side member is positioned at the distal end of the side member.
7. (Previously Presented) The catheter system of claim 1, wherein the side member comprises a flexible side sheath.
8. (Previously Presented) The catheter system of claim 1, further comprising a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon, and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire.
9. (Canceled)
10. (Previously Presented) The catheter system of claim 1, wherein the distal end of the side member extends out of the side hole of the stent.
11. (Original) The catheter system of claim 1, further comprising a balloon disposed at the distal end of the side member.
12. (Original) The catheter system of claim 1, wherein the distal end of the side member is tapered.

13. (Original) The catheter system of claim 1, wherein the distal end of the side member is fabricated from a fluoroscopically visible material.
14. (Previously Presented) The catheter system of claim 1, wherein the catheter and the side member are fabricated from pebax and graphite.
15. (Previously Presented) The catheter' system of claim 1, further comprising a branch stent positioned on the side member.
16. (Previously Presented) The catheter system of claim 1, wherein the catheter further includes a balloon inflation lumen, and further comprising a proximal end hub having a main vessel guidewire channel that is coupled to the main vessel guidewire lumen, a branch vessel guidewire channel that is coupled to the branch vessel guidewire lumen, and a balloon inflation port that is coupled to the balloon inflation lumen.
17. (Previously Presented) The catheter system of claim 16, wherein the first and second guidewire channels are separated by about zero to 20°.
18. (Previously Presented) The catheter system of claim 1, wherein the distal end of the side member is unattached to the distal end of the catheter.
19. (Previously Presented) The catheter system of claim 18, wherein the length over which the distal end of the side member is unattached to the distal end of the catheter is approximately 2 to approximately 10 cm.
- 20-41. (Canceled)
42. (Previously Presented) The catheter system of claim 1, wherein the at least one location is at or near the proximal end of the catheter.

43. (Previously Presented) The catheter system of claim 42, wherein the at least one location is along a length from the proximal end of the catheter to a location proximal to the stent.
44. (Previously Presented) The catheter system of claim 1, wherein the at least one location is spaced a distance from and is proximal to the stent.
45. (Previously Presented) The catheter system of claim 1, further comprising an expander disposed near the distal end of the catheter and wherein the stent is disposed over the expander such that upon expansion of the expander, the stent is configured to expand.
46. (Previously Presented) The catheter system of claim 45, wherein said expander is a balloon.
47. (Previously Presented) the catheter system of claim 1, wherein an outer diameter of the catheter is different than an outer diameter of the side member.
48. (Previously Presented) The catheter system claim 1, wherein the side member has a circular cross-section.
49. (Canceled)
50. (Currently Amended) A catheter system, comprising:
a catheter having a distal end, a proximal end, a main vessel guidewire lumen that is adapted to receive a main vessel guidewire;
a side member disposed adjacent the catheter, the side member having a distal end, a proximal end, a branch vessel guidewire lumen that is adapted to receive a branch vessel guidewire; and
a stent having a side hole through a wall thereof, the stent being disposed over the catheter, wherein the stent hole is substantially alignable with the branch vessel, and when the stent hole is substantially alignable with the branch vessel the stent hole is disposed substantially

in the main vessel prior to expansion; and

an indicator to indicate that the side member is advancing into a branch vessel including ~~[[a]] first and second catheter radiopaque marker markers~~ on the catheter and ~~a second~~ first and second side member radiopaque marker markers on the side member~~[[.]]~~;

wherein a distal portion of the side member is disposed within at least a portion of the stent and ~~is capable of being positioned within a side branch~~ extends through the side hole of the stent, and wherein said first and second ~~catheter~~ radiopaque markers ~~are juxtaposed and~~ said first and second side member radiopaque markers are moveable from in a first configuration and to a second configuration, wherein in the second configuration at least one of the side member radiopaque markers is separated from at least one of the first and second catheter radiopaque markers in a second configuration at the side branch.

51. (Previously Presented) The catheter system of claim 50, wherein the side member comprises a flexible side sheath.

52. (Previously Presented) The catheter system of claim 50, further comprising a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon, and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire.

53. (Previously Presented) The catheter system of claim 50, wherein the distal end of the side member extends out of the side hole of the stent.

54. (Previously Presented) The catheter system of claim 50, further comprising a balloon disposed at the distal end of the side member.

55. (Previously Presented) The catheter system of claim 50, wherein the distal end of the side member is tapered.

56. (Previously Presented) The catheter system of claim 50, wherein the distal end of the side member is fabricated from a fluoroscopically visible material.

57. (Previously Presented) The catheter system of claim 50, wherein the catheter and the side member are fabricated from Pebax and graphite.

58. (Previously Presented) The catheter system of claim 50, further comprising a branch stent positioned on the side member.

59. (Previously Presented) The catheter system of claim 50, further comprising an expander disposed near the distal end of the catheter and wherein the stent is disposed over the expander such that upon expansion of the expander, the stent is configured to expand.

60. (Previously Presented) The catheter system of claim 59, wherein said expander is a balloon.

61. (Previously Presented) The catheter system of claim 60, wherein the catheter further includes a balloon inflation lumen, and further comprising a proximal end hub having a main vessel guidewire channel that is coupled to the main vessel guidewire lumen, a branch vessel guidewire channel that is coupled to the branch vessel guidewire lumen, and a balloon inflation port that is coupled to the balloon inflation lumen.

62. (Previously Presented) The catheter system of claim 61, wherein the first and second guidewire channels are separated by about zero to 20°.

63. (Previously Presented) The catheter system of claim 50, wherein the distal end of the side member is unattached to the distal end of the catheter.

64. (Previously Presented) The catheter system of claim 63, wherein the length over which the distal end of the side member is unattached to the distal end of the catheter is approximately 2 to approximately 10 cm.

65. (Previously Presented) The catheter system of claim 50, wherein the side member is

fixedly attached to at least one location on the catheter.

66. (Previously Presented) The catheter system of claim 65, wherein the at least one location is at or near the proximal end of the catheter.

67. (Previously Presented) The catheter system of claim 65, wherein the at least one location is along a length, from the proximal end of the catheter to a location proximal to the stent.

68. (Previously Presented) The catheter system of claim 65, wherein the at least one location is spaced a distance from and is proximal to the stent.

69. (Previously Presented) The catheter system of claim 50, further comprising a connector coupled to the catheter, wherein the side member extends through the connector so as to be slidably positionable with respect to the catheter.

70. (Previously Presented) The catheter system of claim 50, wherein an outer diameter of the catheter is different than an outer diameter of the side member.

71. (Canceled)

72. (Currently Amended) A catheter system, comprising:

a catheter having a distal end, a proximal end, and a main vessel guidewire lumen that is adapted to receive a main vessel guidewire, at least ~~one~~ two radiopaque ~~marker~~ markers positioned on the catheter;

a side member disposed adjacent and fixedly attached to at least one location on the catheter, the side member having a distal end, a proximal end, ~~and~~ a branch vessel guidewire lumen that is adapted to receive a branch vessel guidewire, and at least ~~one~~ two radiopaque ~~marker~~ markers positioned on the side member, wherein the at least ~~one~~ two radiopaque ~~marker~~ markers positioned on the catheter and the at least ~~one~~ two radiopaque ~~marker~~ markers positioned on the side member are juxtaposed in a first configuration; and

a stent having a side hole through a wall thereof, the stent being disposed over the

catheter; and

a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon, and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire;

~~wherein a distal portion of the side member is disposed within at least a portion of the stent while being adjacent to the catheter and extends through the side hole of the stent, and the distal portion of the side member which is disposed within the at least a portion of the stent is capable of being moveable with respect to the catheter; and~~

~~further comprising a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon, and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire.~~

73. (Currently Amended) A catheter system, comprising:

a catheter having a distal end, a proximal end, a main vessel guidewire lumen that is adapted to receive a main vessel guidewire, and ~~[[a]] first and second catheter radiopaque marker markers positioned~~ thereon;

a side member disposed adjacent the catheter, the side member having a distal end, a proximal end, a branch vessel guidewire lumen that is adapted to receive a branch vessel guidewire, and ~~[[a]] first and second side member radiopaque marker markers positioned~~ thereon; and

a stent having a side hole through a wall thereof the stent being disposed over the catheter; and

a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire;

~~wherein a distal portion of the side member is disposed within at least a portion extends through the side hole of the stent and is capable of being positioned within a side branch, and wherein said first and second catheter radiopaque markers and said first and second side member~~

radiopaque markers are juxtaposed in a first configuration and separated in a second configuration ~~at the side branch, and further comprising a branch stent deployment device having a balloon, a guidewire lumen, an inflation lumen that is adapted to supply a fluid to inflate the balloon and a branch vessel stent disposed over the balloon, wherein the branch stent deployment device is adapted to be advanced over the branch stent guidewire.~~